

GRI ARITHMETIC OPERATOR REGISTERS DIAGNOSTIC PROGRAM

1.0 Function:

Tests registers AX and AY.

1.1 Length:

1724 octal locations, beginning at 0 and ending at 1723.

1.2 Special Hardware:

None

2.0 Description:

DAXAY consists of four groups of tests which will be repeated, in order, indefinitely if no errors are found.

The ability to zero out AX and AY is the first test group. The second sends a random number to all registers that do not alter program flow. An error is detected if AX or AY becomes non-zero. The third group tests all the possible modifications on the zero-to-register instruction for both AX and AY. These modifications are:

1. no modification
2. complement
3. increment
4. complement and increment

5. left shift (link clear and set)
6. complement and left shift (link clear and set)
7. right shift (link clear and set)
8. complement and right shift (link clear and set)

The fourth group tests the register-to-self instruction, with the above modifications, on AX and AY containing a random number.

2.1 Errors:

DAXAY will halt and display in bits 0-5 of data display, the error number.

For Error #2

Press CONTINUE

Display contains actual value in register that failed. (Expected value is zero.)

Press CONTINUE

Bits 10-15 of data display contain register that failed. (AX or AY)

Bits 0-5 contain last register loaded with random number.

Press CONTINUE

Display contains random number used.

Press CONTINUE to proceed to next test.

Press START to stay on same test with same random number being sent to same register. Data display bits 0-5 will contain error number and bit 15 will be lit when error occurs again and be off on no error. Program must be re-started to get out of this loop.

For Errors #1, 3-31:

Bits 10-15 contain register that failed. Bits 0-5 contain error number.

Press CONTINUE.

Display contains actual value in the register.

Press CONTINUE.

Display contains expected value.

Press CONTINUE.

Display contains random number used. (Meaningless when testing zero-to-register instructions i.e. errors #1, 3-15.)

Press CONTINUE to proceed to next test.

Press START to stay on same test with same random number. Bits 0-5 of display will contain error number. Bit 15 will be lit when error occurs again and be off on no error. Program must be restarted to get out of this loop.

3.0 Operating Instructions:

1. Load DAXAY via the Bootstrap Loader for Basic Processor only.
(See Systems Reference Manual.)
2. Transmit 0 to sequence counter.
3. Dial 27 into device select.
4. Press START.

DAXAY will halt only on an error.

4.0 Error Table:

<u>Error No.</u>	<u>Instruction Tested</u>	<u>Description</u>
1	ZR (R)	Zero-to-register
2		Zero-to-register ;random number to all possible other registers.
3	ZRC (R)	Zero-to-register, complemented.
4	ZR P1, (R)	Zero-to-register, incremented.
5	ZRC P1, (R)	Zero-to-register, complemented & incremented.
6	ZR L1, (R) LINK = 0	Zero-to-register, shifted left with link clear.
7	ZR L1, (R) LINK = 01	Zero-to-register, shifted left with link set.
10	ZRC L1, (R) LINK = 0	Zero-to-register, complemented & shifted left with link clear.
11	ZRC L1, (R) LINK = 1	Zero-to-register, complemented & shifted left with link set.
12	ZR R1, (R) LINK = 0	Zero-to-register, shifted right with link clear.
13	ZR R1, (R) LINK = 1	Zero-to-register, shifted right with link set.
14	ZRC R1, (R) LINK = 0	Zero-to-register, complemented & shifted right with link clear.
15	ZRC R1, (R) LINK = 1	Zero-to-register, complemented & shifted right with the link set.
16	RS (R)	Register-to-self.
17	RSC (R)	Register-to-self, complemented.

<u>Error No.</u>	<u>Instruction Tested</u>	<u>Description</u>
20	RS (R),P1	Register-to-self, incremented.
21	RSC(R),P1	Register-to-self, complemented & incremented.
22	RS (R),L1 LINK = 0	Register-to-self, shifted left with link clear.
23	RS (R),L1 LINK = 1	Register-to-self, shifted left with link set.
24	RSC(R), L1 LINK = 0	Register-to-self, complemented & shifted left with link clear.
25	RSC(R), L1 LINK = 1	Register-to-self, complemented & shifted left with link set.
26	RS(R), R1 LINK = 0	Register-to-self, shifted right with link clear.
27	RS(R), R1 LINK = 1	Register-to-self, shifted right with link set.
30	RSC(R), R1 LINK = 0	Register-to-self, complemented & shifted right with link clear.
31	RSC(R),R1 LINK = 1	Register-to-self, complemented & shifted right with link set.

NOTE: (R) is the register being tested (AX or AY)

```

001      ; DAXAY
002      ; 79-43-016L
003      ; DIAGNOSTIC FOR REGISTERS AX,AY
004      ;
001 00000 06 0010 03 MODE1: MRI 154025,TRP ; INITIALIZE RANDOM
      00001 154025
002 00002 03 0000 06      RM  TRP,PRNOR-1 ; NUMBER GENERATOR
      00003 001670
003 00004 06 0010 03      MRI  ERROR+2,TRP ; THESE STEPS
      00005 001233
004 00006 03 0000 06      RM  TRP,ERROR+1 ; MAY HAVE
      00007 001232
005 00010 06 0010 03      MRI  MEMEV+2,TRP ; BEEN WRITTEN
      00011 000046
006 00012 03 0000 06      RM  TRP,CONT-1 ; OVER
      00013 000137
007 00014 06 0010 03      MRI  LOOP1,TRP
      00015 000164
008 00016 03 0000 06      RM  TRP,CNST-1
      00017 000204
009 00020 06 0010 03      MRI  ER2,TRP
      00021 001354
010 00022 03 0000 06      RM  TRP,CONT-3
      00023 000135
011 00024 06 0010 03      MRI  ER2-10,TRP
      00025 001344
012 00026 03 0000 06      RM  TRP,CONT-5
      00027 000133
013 00030 06 0010 03      MRI  14103,TRP ; MRD
      00031 014103
014 00032 03 0000 06      RM  TRP,LOOP1+4
      00033 000170
015 00034 06 0010 03      MRI  LIST-1,TRP
      00035 000216
016 00036 03 0000 06      RM  TRP,LOOP1+5
      00037 000171
017 00040 00 0110 06      ZMI  P1,ERNO ; INIT. ERROR INDIC.
      00041 000041
018      ERNO=.-1
019 00042 00 0100 03      JU  JLIST ; DO 1ST TWO TESTS
      00043 000150
001      ; PUT RANDOM NUMBER IN ALL
002      ; POSSIBLE REGISTERS, AND
003      ; MAKE SURE AX + AY REMAIN
004      ; EQUAL TO ZERO
005 00044 00 0010 06 MEMEV: ZMI 0 ; INITIALIZE REG.
      00045 000000
006      REG=.-1
007 00046 00 0000 11      ZR  AX ; ZERO OUT
008 00047 00 0000 12      ZR  AY ; AX + AY
009 00050 06 0100 06      MS  REG,P1
      00051 000045
010 00052 00 0100 03      JU  $SAD ; REG=02?
      00053 001502
011 00054 000045      WRD  REG,CNST+1
      00055 000206
012 00056 03 0100 03      JC  TRP,ETZ,MEMEV+2
      00057 000046
013 00060 00 0100 03      JU  $SAD ; REG=03?

```

00061 001502	
014 00062 000045	WRD REG, CNST+2
00063 000207	
015 00064 03 0100 03	JC TRP, ETZ, MEMEV+2
00065 000046	
016 00066 00 0100 03	JU \$SAD ; REG=07?
00067 001502	
017 00070 000045	WRD REG, CNST+3
00071 000210	
018 00072 03 0100 03	JC TRP, ETZ, MEMEV+2
00073 000046	
019 00074 00 0100 03	JU \$SAD ; REG=AX?
00075 001502	
020 00076 000045	WRD REG, CNST+4
00077 000211	
021 00100 03 0100 03	JC TRP, ETZ, MEMEV+2
00101 000046	
022 00102 00 0100 03	JU \$SAD ; REG=AY?
00103 001502	
023 00104 000045	WRD REG, CNST+5
00105 000212	
024 00106 03 0100 03	JC TRP, ETZ, MEMEV+2
00107 000046	
025 00110 00 0100 03	JU \$SAD ; REG<100?
00111 001502	
026 00112 000045	WRD REG, CNST+6
00113 000213	
027 00114 03 0100 03	JC TRP, GEZ, CONT
00115 000140	
028 00116 00 0100 03	JU \$SAD ; FORM INST.
00117 001502	
029 00120 000045	WRD REG ; 00 0000 REG
030 00121 000214	WRD CNST+7 ; 06 0000 00
031 00122 03 0000 06	RM TRP, .+6
00123 000130	
032 00124 06 0010 03	MRI PRNOB-1, TRP
00125 001670	
033 00126 03 0000 06	RM TRP, .+3
00127 000131	
034 00130 000000	WRD 0 ; MEM. TO REG.
035 00131 000000	WRD 0 ; HERE
036 00132 11 0110 03	JC AX, NEZ, ER2-10
00133 001344	
037 00134 12 0110 03	JC AY, NEZ, ER2
00135 001354	
038 00136 00 0100 03	JU MEMEV+2
00137 000046	
001 00140 06 0010 03 CONT:	MRI .+5, TRP
00141 000145	
002 00142 03 0000 06	RM TRP, JLIST+1 ; CONT. TESTS
00143 000151	
003 00144 00 0100 03	JU LOOP1 ; UNTIL FINISHED, THEN
00145 000164	
004 00146 00 0100 03	JU MEMEV-4 ; START OVER
00147 000040	
005 00150 03 0010 06 JLIST:	RMI TRP, 0 ; JUMP THRU LIST OF TESTS.
00151 000000	
006 00152 00 0100 03	JU PRNOB ; GET RANDOM #
00153 001671	

```

007 00154 06 0010 03      MRI  LIST-1,TRF
      00155 000216
008 00156 03 0000 06      RM   TRF,LIST-1 ;INIT. LIST INDEX
      00157 000216
009 00160 06 0000 03      MR   PRNOB-1,TRF ;STORE FANDOM
      00161 001670
010 00162 03 0010 06      RMI  TRF,0      ;NUMBER
      00163 000000
011                                RNSTO=-1
012 00164 06 0000 03 LOOP1: MR   RNSTO,TRF ;REINITIALIZE WORKING
      00165 000163
013 00166 03 0000 06      RM   TRF,PRNOB-1 ;RANDOM NUMBER
      00167 001670
014 00170 06 0001 03      MRD  LIST-1,TRF ;GET JUMP ADDR.
      00171 000216
015 00172 03 0101 03      JCD  TRF,ETZ,JLIST+1 ;EXIT ON ADDR.=0
      00173 000151
016 00174 03 0000 06      RM   TRF,TADDR ;SET UP JUMP
      00175 000200
017 00176 02 0001 00      FOM  CLL
018 00177 00 0100 03      JU   .          ;PERFORM TEST
      00200 000177
019                                TADDR=-1
020 00201 06 0100 06      MS   ERNO,P1      ;INCREMENT INDICATOR
      00202 000041
021 00203 00 0100 03      JU   LOOP1
      00204 000164
001 00205 177777      CNST: WRD  -1          ;COMPARISON CONSTANT
002 00206 177776      WRD  -2          ;ILLEGAL
003 00207 177775      WRD  -3          ;REGISTERS
004 00210 177771      WRD  -7
005 00211 177767      WRD  -11'
006 00212 177766      WRD  -12
007 00213 177700      WRD  -100
008 00214 014000      WRD  14000      ;06 0000 00
009 00215 000027      WRD  27        ;00 0000 27
010 00216 000000      WRD  0          ;INDEX FOR JUMP LIST
011 00217 000301      LIST: WRD  ZX          ;LIST OF TESTS
012 00220 000310      WRD  ZY
013 00221 000000      WRD  0          ;RETURN AFTER 1ST TWO
014 00222 000323      WRD  CZX
015 00223 000334      WRD  CZY
016 00224 000345      WRD  ZPX
017 00225 000354      WRD  ZPY
018 00226 000363      WRD  CZPX
019 00227 000372      WRD  CZPY
020 00230 000401      WRD  ZLXC
021 00231 000410      WRD  ZLYC
022 00232 000417      WRD  ZLXS
023 00233 000427      WRD  ZLYS
024 00234 000437      WRD  CZLXC
025 00235 000450      WRD  CZLYC
026 00236 000461      WRD  CZLXS
027 00237 000473      WRD  CZLYS
028 00240 000505      WRD  ZRXC
029 00241 000514      WRD  ZRYC
030 00242 000523      WRD  ZRXS
031 00243 000534      WRD  ZRYS
032 00244 000545      WRD  CZRXC

```


033	00245	000557	WRD	CZRYC	
034	00246	000571	WRD	CZRXS	
035	00247	000603	WRD	CZRYS	
036	00250	000615	WRD	RSAX	
037	00251	000624	WRD	RSAY	
038	00252	000633	WRD	CESAX	
039	00253	000645	WRD	CESAY	
040	00254	000657	WRD	AXP1	
041	00255	000670	WRD	AYP1	
042	00256	000701	WRD	CAXP1	
043	00257	000713	WRD	CAYP1	
044	00260	000725	WRD	XL1C	
045	00261	000737	WRD	YL1C	
046	00262	000751	WRD	XL1S	
047	00263	000766	WRD	YL1S	
048	00264	001003	WRD	CXL1C	
049	00265	001020	WRD	CYL1C	
050	00266	001035	WRD	CXL1S	
051	00267	001053	WRD	CYL1S	
052	00270	001071	WRD	XR1C	
053	00271	001103	WRD	YR1C	
054	00272	001115	WRD	XR1S	
055	00273	001130	WRD	YR1S	
056	00274	001143	WRD	CXR1C	
057	00275	001160	WRD	CYR1C	
058	00276	001175	WRD	CXR1S	
059	00277	001213	WRD	CYR1S	
060	00300	000000	WRD	0	;END OF LIST
001					;TEST ALL ZERO TO REGISTER
002					;PATHS
003	00301	00 0000 11	ZX:	ZR AX	;ZF AX
004	00302	00 0000 06		ZM PRNOB-1	
	00303	001670			
005	00304	11 0110 03		JC AX,NEZ,ERROR	
	00305	001231			
006	00306	00 0100 03		JU TADDR+1	
	00307	000201			
007	00310	00 0000 12	ZY:	ZR AY	;ZR AY
008	00311	00 0000 06		ZM PRNOB-1	
	00312	001670			
009	00313	06 0100 06		MS ERNO,P1	;TO ALLOW FOR
	00314	000041			
010	00315	06 0100 06		MS ERNO,P1	;MEMEV TEST
	00316	000041			
011	00317	12 0110 03		JC AY,NEZ,ERROR	
	00320	001231			
012	00321	00 0100 03		JU TADDR+1	
	00322	000201			
013	00323	00 0010 11	CZX:	ZRC AX	;ZRC AX
014	00324	11 0010 06		RMI AX,0	
	00325	000000			
015				TEMP=-1	
016	00326	06 0000 03		MR CNST,TRP	
	00327	000205			
017	00330	03 0000 06		RM TRP,PRNOB-1	
	00331	001670			
018	00332	00 0100 03		JU PCMP	
	00333	001660			
019	00334	00 0010 12	CZY:	ZRC AY	;ZRC AY

020	00335	12	0000	06	RM	AY, TEMP	
	00336		000325				
021	00337	06	0000	03	MR	CNST, TRP	
	00340		000205				
022	00341	03	0000	06	RM	TRP, PRNOB-1	
	00342		001670				
023	00343	00	0100	03	JU	PCMP	
	00344		001660				
024	00345	00	0100	11	ZFX:	ZR P1, AX	;ZR P1, AX
025	00346	11	0000	06	RM	AX, TEMP	
	00347		000325				
026	00350	00	0100	06	ZM	P1, PRNOB-1	
	00351		001670				
027	00352	00	0100	03	JU	PCMP	
	00353		001660				
028	00354	00	0100	12	ZPY:	ZR P1, AY	;ZR P1, AY
029	00355	12	0000	06	RM	AY, TEMP	
	00356		000325				
030	00357	00	0100	06	ZM	P1, PRNOB-1	
	00360		001670				
031	00361	00	0100	03	JU	PCMP	
	00362		001660				
001	00363	00	0110	11	CZPX:	ZRC P1, AX	;ZRC P1, AX
002	00364	00	0000	06	ZM	PRNOB-1	
	00365		001670				
003	00366	11	0110	03	JC	AX, NEZ, ERROR	
	00367		001231				
004	00370	00	0100	03	JU	TADDR+1	
	00371		000201				
005	00372	00	0110	12	CZPY:	ZRC P1, AY	;ZRC P1, AY
006	00373	00	0000	06	ZM	PRNOB-1	
	00374		001670				
007	00375	12	0110	03	JC	AY, NEZ, ERROR	
	00376		001231				
008	00377	00	0100	03	JU	TADDR+1	
	00400		000201				
009	00401	00	1000	11	ZLXC:	ZR L1, AX	;ZR L1, AX
010	00402	00	0000	06	ZM	PRNOB-1	;LINK=0
	00403		001670				
011	00404	11	0110	03	JC	AX, NEZ, ERROR	
	00405		001231				
012	00406	00	0100	03	JU	TADDR+1	
	00407		000201				
013	00410	00	1000	12	ZLYC:	ZR L1, AY	;ZR L1, AY
014	00411	00	0000	06	ZM	PRNOB-1	;LINK=0
	00412		001670				
015	00413	12	0110	03	JC	AY, NEZ, ERROR	
	00414		001231				
016	00415	00	0100	03	JU	TADDR+1	
	00416		000201				
017	00417	02	0010	00	ZLXS:	FOM STL	;ZR L1, AX
018	00420	00	1000	11	ZR	L1, AX	;LINK=1
019	00421	00	0100	06	ZM	P1, PRNOB-1	
	00422		001670				
020	00423	11	0000	06	RM	AX, TEMP	
	00424		000325				
021	00425	00	0100	03	JU	PCMP	
	00426		001660				
022	00427	02	0010	00	ZLYS:	FOM STL	;ZR L1, AY

023	00430	00	1000	12	ZR	L1,AY	;LINK=1
024	00431	12	0000	06	RM	AY,TEMP	
	00432	00	00325				
025	00433	00	0100	06	ZM	P1,PRNOB-1	
	00434	00	01670				
026	00435	00	0100	03	JU	PCMP	
	00436	00	01660				
001	00437	00	1010	11	CZLXC: ZRC	L1,AX	;ZRC L1,AX
002	00440	11	0000	06	RM	AX,TEMP	;LINK=0
	00441	00	00325				
003	00442	06	0010	03	MRI	-2,TRP	
	00443	17	7776				
004	00444	03	0000	06	RM	TRP,PRNOB-1	
	00445	00	01670				
005	00446	00	0100	03	JU	PCMP	
	00447	00	01660				
006	00450	00	1010	12	CZLYC: ZRC	L1,AY	;ZRC L1,AY
007	00451	12	0000	06	RM	AY,TEMP	;LINK=0
	00452	00	00325				
008	00453	06	0010	03	MRI	-2,TRP	
	00454	17	7776				
009	00455	03	0000	06	RM	TRP,PRNOB-1	
	00456	00	01670				
010	00457	00	0100	03	JU	PCMP	
	00460	00	01660				
011	00461	02	0010	00	CZLXS: FOM	STL	;ZRC L1,AX
012	00462	00	1010	11	ZRC	L1,AX	;LINK=1
013	00463	06	0000	03	MR	CNST,TRP	
	00464	00	00205				
014	00465	03	0000	06	RM	TRP,PRNOB-1	
	00466	00	01670				
015	00467	11	0000	06	RM	AX,TEMP	
	00470	00	00325				
016	00471	00	0100	03	JU	PCMP	
	00472	00	01660				
017	00473	02	0010	00	CZLYS: FOM	STL	;ZRC L1,AY
018	00474	00	1010	12	ZRC	L1,AY	;LINK=1
019	00475	06	0010	03	MRI	-1,TRP	
	00476	17	7777				
020	00477	03	0000	06	RM	TRP,PRNOB-1	
	00500	00	01670				
021	00501	12	0000	06	RM	AY,TEMP	
	00502	00	00325				
022	00503	00	0100	03	JU	PCMP	
	00504	00	01660				
001	00505	00	1100	11	ZRXC: ZR	R1,AX	;ZR R1,AX
002	00506	00	0000	06	ZM	PRNOB-1	;LINK=0
	00507	00	01670				
003	00510	11	0110	03	JC	AX,NEZ,ERROR	
	00511	00	01231				
004	00512	00	0100	03	JU	TADDR+1	
	00513	00	00201				
005	00514	00	1100	12	ZRYC: ZR	R1,AY	;ZR R1,AY
006	00515	00	0000	06	ZM	PRNOB-1	;LINK=0
	00516	00	01670				
007	00517	12	0110	03	JC	AY,NEZ,ERROR	
	00520	00	01231				
008	00521	00	0100	03	JU	TADDR+1	
	00522	00	00201				

```

009 00523 02 0010 00 ZRXS: FOM STL ;ZR R1,AX
010 00524 00 1100 11 ZR R1,AX ;LINK=1
011 00525 11 0000 06 RM AX,TEMP
    00526 000325
012 00527 02 0010 00 FOM STL
013 00530 00 1100 06 ZM R1,PRNOB-1
    00531 001670
014 00532 00 0100 03 JU PCMP
    00533 001660
015 00534 02 0010 00 ZRYS: FOM STL ;ZR R1,AY
016 00535 00 1100 12 ZR R1,AY ;LINK=1
017 00536 12 0000 06 RM AY,TEMP
    00537 000325
018 00540 02 0010 00 FOM STL
019 00541 00 1100 06 ZM R1,PRNOB-1
    00542 001670
020 00543 00 0100 03 JU PCMP
    00544 001660
001 00545 00 1110 11 CZRXC: ZRC R1,AX ;ZRC R1,AX
002 00546 11 0000 06 RM AX,TEMP ;LINK=0
    00547 000325
003 00550 02 0001 00 FOM CLL
004 00551 06 1100 03 MR CNST,R1,TRF
    00552 000205
005 00553 03 0000 06 RM TRP,PRNOB-1
    00554 001670
006 00555 00 0100 03 JU PCMP
    00556 001660
007 00557 00 1110 12 CZRYC: ZRC R1,AY ;ZRC R1,AY
008 00560 12 0000 06 RM AY,TEMP ;LINK=0
    00561 000325
009 00562 02 0001 00 FOM CLL
010 00563 06 1100 03 MR CNST,R1,TRF
    00564 000205
011 00565 03 0000 06 RM TRP,PRNOB-1
    00566 001670
012 00567 00 0100 03 JU PCMP
    00570 001660
013 00571 02 0010 00 CZRXS: FOM STL ;ZRC R1,AX
014 00572 00 1110 11 ZRC R1,AX ;LINK=1
015 00573 06 0000 03 MR CNST,TRF
    00574 000205
016 00575 03 0000 06 RM TRP,PRNOB-1
    00576 001670
017 00577 11 0000 06 RM AX,TEMP
    00600 000325
018 00601 00 0100 03 JU PCMP
    00602 001660
019 00603 02 0010 00 CZRYS: FOM STL ;ZRC R1,AY
020 00604 00 1110 12 ZRC R1,AY ;LINK=1
021 00605 06 0010 03 MRI -1,TRF
    00606 177777
022 00607 03 0000 06 RM TRP,PRNOB-1
    00610 001670
023 00611 12 0000 06 RM AY,TEMP
    00612 000325
024 00613 00 0100 03 JU PCMP
    00614 001660
001 ;TEST REGISTER TO SELF

```

```

002                                ;DATA PATHS USING RANDOM
003                                ;NUMBER.
004 00615 06 0000 11 RSAX: MR PRNOB-1,AX ;RS AX
    00616 001670
005 00617 11 0000 11 RS AX
006 00620 11 0000 06 RM AX,TEMP
    00621 000325
007 00622 00 0100 03 JU PCMP ;COMPARE
    00623 001660
008 00624 06 0000 12 RSAY: MR PRNOB-1,AY ;RS AY
    00625 001670
009 00626 12 0000 12 RS AY
010 00627 12 0000 06 RM AY,TEMP
    00630 000325
011 00631 00 0100 03 JU PCMP ;COMPARE
    00632 001660
012 00633 06 0000 11 CPSAX: MR PRNOB-1,AX ;RSC AX
    00634 001670
013 00635 11 0010 11 RSC AX
014 00636 11 0000 06 RM AX,TEMP
    00637 000325
015 00640 00 0100 03 JU $SOC
    00641 001441
016 00642 001670 WRD PRNOB-1
017 00643 00 0100 03 JU PCMP
    00644 001660
018 00645 06 0000 12 CRSAY: MR PRNOB-1,AY ;RSC AY
    00646 001670
019 00647 12 0010 12 RSC AY
020 00650 12 0000 06 RM AY,TEMP
    00651 000325
021 00652 00 0100 03 JU $SOC
    00653 001441
022 00654 001670 WRD PRNOB-1
023 00655 00 0100 03 JU PCMP
    00656 001660
024 00657 06 0000 11 AXF1: MR PRNOB-1,AX ;RS AX,P1
    00660 001670
025 00661 11 0100 11 RS AX,P1
026 00662 11 0000 06 RM AX,TEMP
    00663 000325
027 00664 06 0100 06 MS PRNOB-1,P1
    00665 001670
028 00666 00 0100 03 JU PCMP
    00667 001660
029 00670 06 0000 12 AYP1: MR PRNOB-1,AY ;RS AY,P1
    00671 001670
030 00672 12 0100 12 RS AY,P1
031 00673 12 0000 06 RM AY,TEMP
    00674 000325
032 00675 06 0100 06 MS PRNOB-1,P1
    00676 001670
033 00677 00 0100 03 JU PCMP
    00700 001660
001 00701 06 0000 11 CAXP1: MR PRNOB-1,AX ;RSC AX,P1
    00702 001670
002 00703 11 0110 11 RSC AX,P1
003 00704 11 0000 06 RM AX,TEMP
    00705 000325

```

004	00706	00	0100	03	JU	\$STC	
	00707	00	1446				
005	00710	00	1670		WRD	PRNOB-1	
006	00711	00	0100	03	JU	PCMP	
	00712	00	1660				
007	00713	06	0000	12	CAYP1: MR	PRNOB-1,AY ;RSC AY,F1	
	00714	00	1670				
008	00715	12	0110	12	RSC	AY,F1	
009	00716	12	0000	06	RM	AY,TEMP	
	00717	00	0325				
010	00720	00	0100	03	JU	\$STC	
	00721	00	1446				
011	00722	00	1670		WRD	PRNOB-1	
012	00723	00	0100	03	JU	PCMP	
	00724	00	1660				
013	00725	06	0000	11	XL1C: MR	PRNOB-1,AX ;RS AX,L1	
	00726	00	1670				
014	00727	11	1000	11	RS	AX,L1 ;LINK=0	
015	00730	11	0000	06	RM	AX,TEMP	
	00731	00	0325				
016	00732	02	0001	00	FOM	CLL	
017	00733	06	1000	06	MS	PRNOB-1,L1	
	00734	00	1670				
018	00735	00	0100	03	JU	PCMP	
	00736	00	1660				
019	00737	06	0000	12	YL1C: MR	PRNOB-1,AY ;RS AY,L1	
	00740	00	1670				
020	00741	12	1000	12	RS	AY,L1 ;LINK=0	
021	00742	12	0000	06	RM	AY,TEMP	
	00743	00	0325				
022	00744	02	0001	00	FOM	CLL	
023	00745	06	1000	06	MS	PRNOB-1,L1	
	00746	00	1670				
024	00747	00	0100	03	JU	PCMP	
	00750	00	1660				
001	00751	06	0000	11	XL1S: MR	PRNOB-1,AX ;RS AX,L1	
	00752	00	1670				
002	00753	02	0010	00	FOM	STL ;LINK=1	
003	00754	11	1000	11	RS	AX,L1	
004	00755	11	0000	06	RM	AX,TEMP	
	00756	00	0325				
005	00757	02	0010	00	FOM	STL	
006	00760	06	1000	06	MS	PRNOB-1,L1	
	00761	00	1670				
007	00762	00	0100	03	JU	PCMP	
	00763	00	1660				
008	00764	00	0101	03	JUD	XL1S+1	
	00765	00	0752				
009	00766	03	0010	06	YL1S: RMI	TEMP ;RS AY,L1	
	00767	00	0000				
010	00770	06	0000	12	MR	PRNOB-1,AY ;LINK=1	
	00771	00	1670				
011	00772	02	0010	00	FOM	STL	
012	00773	12	1000	12	RS	AY,L1	
013	00774	12	0000	06	RM	AY,TEMP	
	00775	00	0325				
014	00776	02	0010	00	FOM	STL	
015	00777	06	1000	06	MS	PRNOB-1,L1	
	01000	00	1670				

016	01001	00	0100	03	JU	PCMP	
	01002	00	1660				
017	01003	06	0000	11	CXLIC: MR	PRNOB-1, AX ; RSC AX, L1	
	01004	00	1670				
018	01005	11	1010	11	RSC	AX, L1 ; LINK=0	
019	01006	11	0000	06	RM	AX, TEMP	
	01007	00	0325				
020	01010	00	0100	03	JU	\$SOC ; ONE'S COMP.	
	01011	00	1441				
021	01012	00	1670		WRD	PRNOB-1	
022	01013	02	0001	00	FOM	CLL	
023	01014	06	1000	06	MS	PRNOB-1, L1	
	01015	00	1670				
024	01016	00	0100	03	JU	PCMP	
	01017	00	1660				
025	01020	06	0000	12	CYLIC: MR	PRNOB-1, AY ; RSC AY, L1	
	01021	00	1670				
026	01022	12	1010	12	RSC	AY, L1 ; LINK=0	
027	01023	12	0000	06	RM	AY, TEMP	
	01024	00	0325				
028	01025	00	0100	03	JU	\$SOC ; ONE'S COMP.	
	01026	00	1441				
029	01027	00	1670		WRD	PRNOB-1	
030	01030	02	0001	00	FOM	CLL	
031	01031	06	1000	06	MS	PRNOB-1, L1	
	01032	00	1670				
032	01033	00	0100	03	JU	PCMP	
	01034	00	1660				
001	01035	06	0000	11	CXLIS: MR	PRNOB-1, AX ; RSC AX, L1	
	01036	00	1670				
002	01037	02	0010	00	FOM	STL ; LINK=1	
003	01040	11	1010	11	RSC	AX, L1	
004	01041	11	0000	06	RM	AX, TEMP	
	01042	00	0325				
005	01043	00	0100	03	JU	\$SOC ; ONE'S COMP.	
	01044	00	1441				
006	01045	00	1670		WRD	PRNOB-1	
007	01046	02	0010	00	FOM	STL	
008	01047	06	1000	06	MS	PRNOB-1, L1	
	01050	00	1670				
009	01051	00	0100	03	JU	PCMP	
	01052	00	1660				
010	01053	06	0000	12	CYLIS: MR	PRNOB-1, AY ; RSC AY, L1	
	01054	00	1670				
011	01055	02	0010	00	FOM	STL ; LINK=1	
012	01056	12	1010	12	RSC	AY, L1	
013	01057	12	0000	06	RM	AY, TEMP	
	01060	00	0325				
014	01061	00	0100	03	JU	\$SOC ; ONE'S COMP.	
	01062	00	1441				
015	01063	00	1670		WRD	PRNOB-1	
016	01064	02	0010	00	FOM	STL	
017	01065	06	1000	06	MS	PRNOB-1, L1	
	01066	00	1670				
018	01067	00	0100	03	JU	PCMP	
	01070	00	1660				
019	01071	06	0000	11	XRIC: MR	PRNOB-1, AX ; RS AX, R1	
	01072	00	1670				
020	01073	11	1100	11	RS	AX, R1 ; LINK=0	

021	01074	11	0000	06	RM	AX, TEMP	
	01075		000325				
022	01076	02	0001	00	FOM	CLL	
023	01077	06	1100	06	MS	PRNOB-1, R1	
	01100		001670				
024	01101	00	0100	03	JU	PCMP	
	01102		001660				
025	01103	06	0000	12	YR1C: MR	PRNOB-1, AY ; RS AY, R1	
	01104		001670				
026	01105	12	1100	12	RS	AY, R1 ; LINK=0	
027	01106	12	0000	06	RM	AY, TEMP	
	01107		000325				
028	01110	02	0001	00	FOM	CLL	
029	01111	06	1100	06	MS	PRNOB-1, R1	
	01112		001670				
030	01113	00	0100	03	JU	PCMP	
	01114		001660				
001	01115	06	0000	11	XR1S: MR	PRNOB-1, AX ; RS AX, R1	
	01116		001670				
002	01117	02	0010	00	FOM	STL ; LINK=1	
003	01120	11	1100	11	RS	AX, R1	
004	01121	11	0000	06	RM	AX, TEMP	
	01122		000325				
005	01123	02	0010	00	FOM	STL	
006	01124	06	1100	06	MS	PRNOB-1, R1	
	01125		001670				
007	01126	00	0100	03	JU	PCMP	
	01127		001660				
008	01130	06	0000	12	YR1S: MR	PRNOB-1, AY ; RS AY, R1	
	01131		001670				
009	01132	02	0010	00	FOM	STL ; LINK=1	
010	01133	12	1100	12	RS	AY, R1	
011	01134	12	0000	06	RM	AY, TEMP	
	01135		000325				
012	01136	02	0010	00	FOM	STL	
013	01137	06	1100	06	MS	PRNOB-1, R1	
	01140		001670				
014	01141	00	0100	03	JU	PCMP	
	01142		001660				
015	01143	06	0000	11	CXR1C: MR	PRNOB-1, AX ; RSC AX, R1	
	01144		001670				
016	01145	11	1110	11	RSC	AX, R1 ; LINK=0	
017	01146	11	0000	06	RM	AX, TEMP	
	01147		000325				
018	01150	00	0100	03	JU	\$SOC ; ONE'S COMP.	
	01151		001441				
019	01152		001670		WRD	PRNOB-1	
020	01153	02	0001	00	FOM	CLL	
021	01154	06	1100	06	MS	PRNOB-1, R1	
	01155		001670				
022	01156	00	0100	00	JU	PCMP	
	01157		001660				
023	01160	06	0000	12	CYR1C: MR	PRNOB-1, AY ; RSC AY, R1	
	01161		001670				
024	01162	12	1110	12	RSC	AY, R1 ; LINK=0	
025	01163	12	0000	06	RM	AY, TEMP	
	01164		000325				
026	01165	00	0100	03	JU	\$SOC ; ONE'S COMP.	
	01166		001441				


```

027 01167 001670      WRD  PRNOB-1
028 01170 02 0001 00    FOM  CLL
029 01171 06 1100 06    MS   PRNOB-1,R1
      01172 001670
030 01173 00 0100 03    JU   PCMP
      01174 001660
001 01175 06 0000 11 CXR1S: MR   PRNOB-1,AX ;RSC AX,R1
      01176 001670
002 01177 02 0010 00    FOM  STL           ;LINK=1
003 01200 11 1110 11    RSC  AX,R1
004 01201 11 0000 06    RM   AX,TEMP
      01202 000325
005 01203 00 0100 03    JU   $SOC
      01204 001441
006 01205 001670      WRD  PRNOB-1
007 01206 02 0010 00    FOM  STL
008 01207 06 1100 06    MS   PRNOB-1,R1
      01210 001670
009 01211 00 0100 03    JU   PCMP
      01212 001660
010 01213 06 0000 12 CYR1S: MR   PRNOB-1,AY ;RSC AY,R1
      01214 001670
011 01215 02 0010 00    FOM  STL           ;LINK=1
012 01216 12 1110 12    RSC  AY,R1
013 01217 12 0000 06    RM   AY,TEMP
      01220 000325
014 01221 00 0100 03    JU   $SOC
      01222 001441
015 01223 001670      WRD  PRNOB-1
016 01224 02 0010 00    FOM  STL
017 01225 06 1100 06    MS   PRNOB-1,R1
      01226 001670
018 01227 00 0100 03    JU   PCMP
      01230 001660
001      ;ERROR ROUTINE FOR ERRORS 1,3-31
002      ;
003 01231 00 0100 03 ERROR: JU   .+2           ;FOR ERROR ROUTINE
      01232 001233
004 01233 06 0000 03    MR   ERNO,TRP
      01234 000041
005 01235 03 0010 06    RMI  TRP,0           ;GET ERROR #
      01236 000000
006      WERNO=-1
007 01237 02 0001 00    FOM  CLL
008 01240 06 1100 06    MS   WERNO,R1
      01241 001236
009 01242 00 1010 06    ZMI  L1,0           ;SET REG. INDICATOR
      01243 000000
010      IND=-1
011 01244 06 1100 00    MR   .-1,R1,0
      01245 001243
012 01246 00 0101 02    SFM  NOT LNK
013 01247 06 0100 06    MS   WERNO,P1       ;CONTAINS ERROR #
      01250 001236
014 01251 06 0010 03    RRC  6,TRP
015 01252 11 0000 00 RRAX: RR   AX,0           ;GET REGISTER
016 01253 00 0100 02    SFM  LNK           ;THAT FAILED
017 01254 06 0010 03    RRC  6,TRP
018 01255 12 0000 00 RRAY: RR   AY,0

```

019	01256	03	0010	06	RMI	TRP, 0	
	01257	000000					
020	01260	00	0100	03	JU	\$SAD	; ADD TO ERROR #
	01261	001502					
021	01262	001257			WRD	.- 3	
022	01263	001236			WRD	WERNO	
023	01264	03	0000	27	RR	TRP, 27	; DISPLAY REG. THAT FAILED
024	01265	02	0100	00	FOM	HLT	; + ERROR #
025	01266	06	1100	00	MR	IND, R1, 0	
	01267	001243					
026	01270	11	0000	27	RR	AX, 27	; DISPLAY ACTUAL VALUE.
027	01271	00	0100	02	SFM	LNK	
028	01272	12	0000	27	RR	AY, 27	
029	01273	00	0000	00	NOP		
030	01274	02	0100	00	FOM	HLT	
031	01275	06	0000	27	MR	PRNOR-1, 27	; DISPLAY EXPECTED VALUE
	01276	001670					
032	01277	02	0100	00	FOM	HLT	
033	01300	06	0000	27	MR	RNSTO, 27	; DISPLAY RANDOM # USED
	01301	000163					
034	01302	02	0110	00	FOM	HLT STL	; STRT OR CONT
035	01303	00	0101	02	SFM	NOT LNK	; CONTINUE, GO
036	01304	00	0100	03	JU	TADDR+1	
	01305	000201					
037	01306	06	0010	03	MRI	STERR, TRP	; GO HERE IF STILL
	01307	001332					
038	01310	03	0000	06	RM	TRP, ERROR+1	; ERROR
	01311	001232					
039	01312	06	0010	03	MRI	NOTER, TRP	; GO HERE IF NO
	01313	001335					
040	01314	03	0000	06	RM	TRP, CNST-1	; ERROR
	01315	000204					
041	01316	06	0010	03	RRC	6, TRP	; STORE MR
042	01317	06	0000	03	RR	6, 3	
043	01320	03	0000	06	RM	TRP, LOOP1+4	
	01321	000170					
044	01322	06	0010	03	MRI	TADDR, TRP	
	01323	000200					
045	01324	03	0000	06	RM	TRP, LOOP1+5	
	01325	000171					
046	01326	06	1000	06	MS	WERNO, L1	
	01327	001236					
047	01330	00	0100	03	JU	LOOP1	
	01331	000164					
048	01332	02	0010	00	STERR: FOM	STL	
049	01333	00	0100	03	JU	NOTER+1	
	01334	001336					
050	01335	02	0001	00	NOTER: FOM	CLL	
051	01336	06	1100	27	MR	WERNO, R1, 27	
	01337	001236					
052	01340	00	0100	03	JU	LOOP1	
	01341	000164					
001							; ERROR ROUTINE FOR ERROR #2
002	01342	03	0000	06	RM	TRP, ER2+1	; AX ERROR ENTRY
	01343	001355					
003	01344	06	0010	03	MRI	RRAX, TRP	
	01345	001252					
004	01346	03	0000	06	RM	TRP, AHLT+2	
	01347	001371					

005	01350	03	0000	06	RM	TRP,AHLT+12	
	01351		001401				
006	01352	00	0100	03	JU	ER2+10	
	01353		001364				
007	01354	03	0010	06	ER2: RMI	TRP,0	;AY ERROR ENTRY
	01355		000000				
008	01356	06	0010	03	MRI	RRAY,TRP	
	01357		001255				
009	01360	03	0000	06	RM	TRP,AHLT+2	
	01361		001371				
010	01362	03	0000	06	RM	TRP,AHLT+12	
	01363		001401				
011	01364	06	0010	27	MRI	2,27	;DISPLAY ERROR #
	01365		000002				
012	01366	02	0100	00	FOM	HLT	
013	01367	00	0100	03	AHLT: JU	\$SAD	;FORM RR -,27
	01370		001502				
014	01371		000000		WRD	0	
015	01372		000215		WRD	CNST+10	
016	01373	03	0000	06	RM	TRP,++2	
	01374		001375				
017	01375		000000		WRD	0	;DISPLAY CONTENTS OF REG.
018	01376	02	0100	00	FOM	HLT	
019	01377	00	0100	03	JU	\$SAD	
	01400		001502				
020	01401		000000		WRD	0	
021	01402		000045		WRD	REG	;DISPLAY REG. THAT FAILED
022	01403	03	0000	27	RR	TRP,27	;+LAST REG. LOADED.
023	01404	02	0100	00	FOM	HLT	
024	01405	06	0000	27	MR	PRNOB-1,27	;DISPLAY RANDOM #
	01406		001670				
025	01407	02	0110	00	FOM	HLT STL	
026	01410	00	0101	02	SFM	NOT LNK	
027	01411	00	0101	03	JUD	ER2+1	
	01412		001355				
028	01413	06	0010	03	START: MRI	NOERR,TRP	;FIX FOR INFINITE LOOP
	01414		001431				
029	01415	03	0000	06	RM	TRP,CONT-1	;ON ERROR INST.
	01416		000137				
030	01417	06	0010	03	MRI	YSERR,TRP	
	01420		001435				
031	01421	03	0000	06	RM	TRP,CONT-3	
	01422		000135				
032	01423	03	0000	06	RM	TRP,CONT-5	
	01424		000133				
033	01425	00	0000	11	ZR	AX	
034	01426	00	0000	12	ZR	AY	
035	01427	00	0100	03	JU	CONT-10	
	01430		000130				
036	01431	06	0010	27	NOERR: MRI	2,27	;NO ERROR THIS TIME
	01432		000002				
037	01433	00	0100	03	JU	.-6	
	01434		001425				
038	01435	06	0010	27	YSERR: MRI	100002,27	;ERROR STILL
	01436		100002				
039	01437	00	0100	03	JU	NOERR-4	
	01440		001425				
001							; SINGLE PRECISION COMPLEMENT
002	01441	03	0000	06	\$SOC: RM	TRP,\$STC+1	;ONE'S COMPLEMENT

01442	001447		
003	01443 02 0001 00	FOM	CLL
004	01444 00 0100 03	JU	\$STC+3
	01445 001451		
005	01446 03 0010 06	\$STC: RMI	TRP,0 ; TWO'S COMPLEMENT
	01447 000000		
006	01450 02 0010 00	FOM	STL
007	01451 06 0010 03	MRI	-21,TRP
	01452 177757		
008	01453 03 0000 06	RM	TRP,++14
	01454 001467		
009	01455 06 0001 03	MRD	\$STC+1,TRP
	01456 001447		
010	01457 03 0000 06	RM	TRP,++5
	01460 001464		
011	01461 03 0000 06	RM	TRP,++14
	01462 001475		
012	01463 06 1100 06	MS	0,R1
	01464 000000		
013	01465 02 0011 00	FOM	CML
014	01466 06 0110 06	MSI	0,P1
	01467 000000		
015	01470 00 0010 02	SFM	BOV
016	01471 00 0100 03	JU	.-6
	01472 001463		
017	01473 00 0100 02	SFM	LNK
018	01474 06 0100 06	MS	0,P1
	01475 000000		
019	01476 00 0101 03	JUD	\$STC+1
	01477 001447		
001			; SINGLE PRECISION SUM
002	01500 000000	WRD	0,0
	01501 000000		
003	01502 03 0010 06	\$SAD: RMI	TRP,0
	01503 000000		
004	01504 06 0110 03	MRI	-21,P1,TRP
	01505 177757		
005	01506 03 0000 06	RM	TRP,++22
	01507 001530		
006	01510 00 0100 03	JU	\$2AF
	01511 001616		
007	01512 001503	WRD	\$SAD+1,\$SAD-2,++2
	01513 001500		
	01514 001516		
008	01515 06 1110 06	MSI	0,R1
	01516 000000		
009	01517 00 0101 02	SFM	NOT LNK
010	01520 06 0100 06	MS	\$SAD-2,P1
	01521 001500		
011	01522 17 1000 00	RR	MSR,L1,0
012	01523 06 1100 06	MS	\$SAD-2,R1
	01524 001500		
013	01525 06 1100 06	MS	\$SAD-1,R1
	01526 001501		
014	01527 06 0110 06	MSI	0,P1
	01530 000000		
015	01531 00 0010 02	SFM	BOV
016	01532 00 0100 03	JU	.-15
	01533 001515		

017	01534	06	0000	03	MR	\$SAD-1, TRP
	01535	00	01501			
018	01536	06	0100	07	MR	\$SAD+1, P1, SC
	01537	00	01503			
001					; SINGLE PRECISION LOGICAL FUNCTIONS	
002	01540	00	000000		WRD	0, 0, 0
	01541	00	000000			
	01542	00	000000			
003	01543	03	0000	06	\$SLG: RM	TRP, .+25
	01544	00	01570			
004	01545	06	0010	03	MRI	-20, TRP
	01546	17	7760			
005	01547	03	0000	06	RM	TRP, .+25
	01550	00	01574			
006	01551	00	0100	03	JU	\$2AF
	01552	00	01616			
007	01553	00	01540		WRD	\$SLG-3, .+3, .+6
	01554	00	01557			
	01555	00	01563			
008	01556	06	1110	06	MSI	0, R1
	01557	00	000000			
009	01560	00	1000	06	ZM	L1, \$SLG-2
	01561	00	01541			
010	01562	06	1110	06	MSI	0, R1
	01563	00	000000			
011	01564	00	0101	02	SFM	NOT LNK
012	01565	06	0100	06	MS	\$SLG-2, P1
	01566	00	01541			
013	01567	06	0010	07	MRI	.-1, SC
	01570	00	01566			
014	01571	06	1100	06	MS	\$SLG-1, R1
	01572	00	01542			
015	01573	06	0110	06	MSI	0, P1
	01574	00	000000			
016	01575	00	0010	02	SFM	BOV
017	01576	00	0100	03	JU	.-20
	01577	00	01556			
018	01600	06	0000	03	MR	\$SLG-1, TRP
	01601	00	01542			
019	01602	06	0100	07	MR	\$SLG-3, P1, SC
	01603	00	01540			
020	01604	03	0000	06	\$SXR: RM	TRP, \$SLG-3 ; XOR
	01605	00	01540			
021	01606	06	0010	03	MRI	.+3, TRP
	01607	00	01611			
022	01610	06	0010	07	MRI	\$SLG-1, SC
	01611	00	01542			
023	01612	06	1100	06	MS	\$SLG-2, R1
	01613	00	01541			
024	01614	06	0010	07	MRI	\$SLG+25, SC
	01615	00	01570			
001					; TWO ARG FETCH	
002	01616	03	0010	06	\$2AF: RMI	TRP, 0
	01617	00	000000			
003	01620	06	0001	03	MRD	\$2AF+1, TRP
	01621	00	01617			
004	01622	03	0000	06	RM	TRP, .+11
	01623	00	01633			
005	01624	03	0000	06	RM	TRP, .+23

01625	001647		
006	01626 06 0001 03	MRD	\$2AF+1, TRP
	01627 001617		
007	01630 03 0000 06	RM	TRP, .+11
	01631 001641		
008	01632 06 0001 03	MRD	0, TRP
	01633 000000		
009	01634 03 0000 06	RM	TRP, .+3
	01635 001637		
010	01636 06 0000 03	MR	0, TRP
	01637 000000		
011	01640 03 0000 06	RM	TRP, 0
	01641 000000		
012	01642 06 0001 03	MRD	\$2AF+1, TRP
	01643 001617		
013	01644 03 0000 06	RM	TRP, .+11
	01645 001655		
014	01646 06 0001 03	MRD	0, TRP
	01647 000000		
015	01650 03 0000 06	RM	TRP, .+3
	01651 001653		
016	01652 06 0000 03	MR	0, TRP
	01653 000000		
017	01654 03 0000 06	RM	TRP, 0
	01655 000000		
018	01656 06 0100 07	MR	\$2AF+1, P1, SC
	01657 001617		
001		; COMPARE TWO ARGS.	
002		; JUMP TO ERROR ON UNEQUAL	
003		; COMPARE	
004	01660 00 0100 03	PCMP:	JU \$SXP
	01661 001604		
005	01662 001670	WRD	PRNOB-1
006	01663 000325	WRD	TEMP
007	01664 03 0110 03	JC	TRP, NEZ, ERROR
	01665 001231		
008	01666 00 0100 03	JU	TADDR+1
	01667 000201		
001		; RANDOM NUMBER GENERATOR	
002		; -EXITS WITH NEW #	
003		; IN PRNOB-1	
004	01670 000000	WRD	0
005	01671 06 1000 00	PRNOB:	MR PRNOB-1, L1, 0
	01672 001670		
006	01673 06 1000 06	MS	PRNOB-1, L1
	01674 001670		
007	01675 00 1010 06	ZMI	L1, 0
	01676 000000		
008		SAVE=.-1	
009	01677 00 0100 03	JU	\$SAD
	01700 001502		
010	01701 001725	WRD	A, PRNOB-1
	01702 001670		
011	01703 03 0000 06	RM	TRP, \$SLG-1
	01704 001542		
012	01705 06 0000 03	MR	SAVE, TRP
	01706 001676		
013	01707 03 0100 03	JC	TRP, ETZ, .+6
	01710 001715		

014	01711	00	0100	03	JU	\$SXR
	01712	00	1604			
015	01713	00	1725		WRD	A, PRNOB-1
	01714	00	1670			
016	01715	00	0100	03	JU	\$SAD
	01716	00	1502			
017	01717	00	1725		WRD	A, \$SLG-1
	01720	00	1542			
018	01721	03	0000	06	RM	TRF, PRNOB-1
	01722	00	1670			
019	01723	00	0100	03	JU	JLIST+4
	01724	00	0154			
020	01725	154025		A:	WRD	154025
001					END	

MODE1 000000
PRNOR 001671
ERROR 001231
MEMEV 000044
CONT 000140
LOOP1 000164
CNST 000205
FR2 001354
LIST 000217
ERNO 000041
JLIST 000150
REG 000045
\$SAD 001502
RNSTO 000163
TADDR 000200
ZX 000301
ZY 000310
CZX 000323
CZY 000334
ZPX 000345
ZPY 000354
CZPX 000363
CZPY 000372
ZLXC 000401
ZLYC 000410
ZLXS 000417
ZLYS 000427
CZLXC 000437
CZLYC 000450
CZLXS 000461
CZLYS 000473
ZRXC 000505
ZRYC 000514
ZRXS 000523
ZRYS 000534
CZRXC 000545
CZRYC 000557
CZRXS 000571
CZRYS 000603
RSAX 000615
RSAY 000624
CRSAX 000633
CRSAY 000645
AXP1 000657
AYP1 000670
CAXP1 000701
CAYP1 000713
XL1C 000725
YL1C 000737
XL1S 000751
YL1S 000766
CXL1C 001003
CYL1C 001020
CXL1S 001035
CYL1S 001053
XR1C 001071
YR1C 001103
XR1S 001115
YR1S 001130

CXR1C 001143
CYR1C 001160
CXR1S 001175
CYR1S 001213
TEMP 000325
PCMP 001660
\$SOC 001441
\$STC 001446
WERN0 001236
IND 001243
RRAX 001252
RRAY 001255
STERR 001332
NOTER 001335
AHLT 001367
START 001413
NOERR 001431
YSERR 001435
\$2AF 001616
\$SLG 001543
\$SXR 001604
SAVE 001676
A 001725